

Resource and Budget Data

As noted in the Preface and Chapter 1, NLM has already gained much improvement in understanding of future requirements and opportunities through the year of intensive planning. Changes are already taking place in the direction of programs within current budgetary and personnel allocations. That is, NLM is already moving in the direction pointed to by this Report. Yet a number of the recommendations for achieving the Board's long range goals clearly are for advanced or expanded activities above and beyond NLM's current workload and commitments. Thus, while all are logical extensions of current activities, the majority will require additions to both NLM's fiscal appropriations and Full Time Equivalent personnel allocation in order to fulfill the responsibilities and opportunities identified in this plan.

The following budget tables present the Board's estimates of:

- Resources needed to implement individual recommendations within the five planning domains, projected over the next three years;
- Budgetary resources aggregated by domain;
- Effect of additional resources according to budget activities.

Additional Resources Needed to Implement Individual Recommendations

Domain 1: Building and Organizing The Library's Collection

(Dollars in Thousands)

Goals and Recommendations	Incremental Resources			
	FY 88	FY 89	FY 90	Personnel
1.1 Continue as The "Library of Record" For Medicine and Related Sciences				
1.1.1 Expand acquisition of appropriate electronic media and historically significant records of modern biomedical research and practice.	\$195	\$255	\$275	1.5
1.1.2 Carry out the NLM preservation plan:				
Preserve materials in the NLM collection;	700	1,100	1,100	2
Coordinate a national preservation program for the biomedical literature held in other libraries and institutions;	1,000	1,000	1,000	0
Research the preservation characteristics of new storage media;	350	350	350	2
Encourage use of permanent materials.	100	100	100	1
Subtotal:	\$2,345	\$2,805	\$2,825	6.5
1.2 Improve the Organization and Description of The Literature				
1.2.1 Experiment with data from machine-readable publications in the cataloging and indexing processes.	\$75	\$75	\$75	0.5
1.2.2 Investigate indexing the literature to cover signs, symptoms, procedures, research populations, clinical values, etc.	150	150	150	1
1.2.3 Experiment with artificial intelligence techniques and expert systems to improve cataloging and indexing.	175	200	225	2
1.2.4 Investigate including table of contents data in cataloging records.	75	75		0.5
1.2.5 Apply bibliometric techniques to the problem of selecting journals appropriate for indexing.	225	225	225	1
1.2.6 Support research into methods for producing useful summaries of knowledge in particular areas.	500	500	500	0
Subtotal:	\$1,200	\$1,225	\$1,175	5
1.3 Adapt NLM Library-Methods to Accommodate New Electronic Forms of Information				
1.3.1 Define and resolve issues raised by new electronic media.	\$100	\$100	\$100	1
Subtotal:	\$100	\$100	\$100	1
TOTAL DOMAIN 1:	\$3,645	\$4,130	\$4,100	12.5

Additional Resources Needed to Implement Individual Recommendations
Domain 2: Locating and Gaining Access to Medical and Scientific Literature

(Dollars in Thousands)

Goals and Recommendations	Incremental Resources			
	FY 88	FY 89	FY 90	Personnel
2.1 Make Information More Accessible to Health Professionals				
2.1.1 Enhance the RML network ensuring its ability to use new technologies.	\$3,050	\$3,050	\$3,050	1
2.1.2 Support IAIMS planning, model development, and implementation efforts, and disseminate this information to other institutions.	2,000	3,000	4,000	0
2.1.3 Make research grants and contracts to develop intelligent interfaces for gateways to increase access to information.	500	500	500	0
2.1.4 Work cooperatively with selected data base producers to create linkages, reduce costs, and facilitate access.		no cost		
2.1.5 Develop an electronic gateway function to link relevant data bases.	2,250	3,250	4,250	5
Subtotal:	\$7,800	\$9,800	\$11,800	6
2.2 Provide Enhanced Information Products and Services				
2.2.1 Enhance GRATEFUL MED and develop other user-oriental systems.	\$200	\$200	\$200	0
2.2.2 Explore development of knowledge-based systems for information providers.	250	250	250	1
2.2.3 Provide systematic reference referral linkages.	50	80	100	0
2.2.4 Expand document delivery system.	250	250	250	2
2.2.5 Develop online index to special knowledge-based systems.	100	40	40	0.5
2.2.6 Examine health professionals' need for, access to, and use of biomedical information; examine the relationship between access to information and patient care.	75	75	75	0
2.2.7 Promote the international exchange of biomedical information.	10	10	10	0
Subtotal:	\$935	\$905	\$925	3.5
2.3 Support Training of Medical Librarians and Information Specialists				
2.3.1 Support new programs to create special curricula.	\$1,000	\$1,000	\$1,000	0
Subtotal:	\$1,000	\$1,000	\$1,000	0
2.4 Review Public's Need For and Access To Health Information				
2.4.1 Examine current sources of health information and NLM role in this area.	\$100	0	0	0
2.4.2 Augment DIRLINE to provide a directory of public health information.	50	50	50	0.5
Subtotal:	\$150	\$50	\$50	0.5
TOTAL DOMAIN 2:	\$9,885	\$11,755	\$13,775	10.0

Additional Resources Needed to Implement Individual Recommendations

Domain 3: Obtaining Factual Information From Data Bases

(Dollars in Thousands)

Goals and Recommendations	Incremental Resources			
	FY 88	FY 89	FY 90	Personnel
3.1 Expand Public Health and Environmental Data Bases				
3.1.1 Maintain and enhance the TOXNET data bases.	\$700	\$700	\$700	5
3.1.2 Develop profiles for hazardous chemicals with ATDSR.	150	150	150	3
3.1.3 Assume coordinating role for building and maintaining data bases related to hazardous chemicals.	60	60	60	0.5
3.1.4 Continue to develop gateway systems to hazardous chemical data bases in public and private systems.	200	200	200	1
3.1.5 Increase review of NLM data bases by subject experts.	125	125	125	1
3.1.6 Support modeling activities which relate biological processes to chemical structures.	0	0	0	0
Subtotal:	\$1,235	\$1,235	\$1,235	10.5
3.2 Establish Information Services and Linkages For Biotechnology Information				
3.2.1 Institute a program of biotechnology information services: Research data base representation for molecular biology, retrieval-linkages, modeling systems and interfaces based on algorithms, graphics and expert systems.	\$5,000	\$5,000	\$5,000	14
Provide repository, directory, and distribution services.	4,000	4,000	4,000	14
Implement workshops, clearinghouse and documentation programs.	400	400	400	4
3.2.2 Sponsor consensus meetings on information sharing and retrieval from molecular biology data bases.	320	320	320	2
Subtotal:	\$9,720	\$9,720	\$9,720	34
3.3 Support the Development of Medical Practice-Linked Data Bases				
3.3.1 Establish an intramural program capable of developing practice-linked data bases.	\$1,500	\$1,500	\$1,500	5
3.3.2 Develop menu-driven interfaces between factual data bases.		Resources contained in 3.1 above		
3.3.3 Signify NLM's willingness to store and make available appendiceal data files of selected published research.	300	300	300	0
Subtotal:	\$1,800	\$1,800	\$1,800	5
TOTAL DOMAIN 3:	\$12,755	\$12,755	\$12,755	49.5

Additional Resources Needed to Implement Individual Recommendations

Domain 4: Medical Informatics

(Dollars in Thousands)

Goals and Recommendations	Incremental Resources			
	FY 88	FY 89	FY 90	Personnel
4.1 Support Extramural Research on Information and Knowledge Structure				
4.1.1 Increase support in information and knowledge structure.	\$3,000	\$6,000	\$9,000	0
Subtotal:	\$3,000	\$6,000	\$9,000	0
4.2 Strengthen Medical Informatics Research				
4.2.1 Continue development of the Unified Medical Language System:				
Create an internal research team.	\$1,050	\$1,050	\$1,050	11
Collaborate with extramural research groups.	1,000	1,000	1,000	0
Collaborate with appropriate associations.	500	500	500	0
Support investigator-initiated research projects.	2,000	2,300	2,645	0
4.2.2 Facilitate development and evaluation of expert systems.	2,300	4,300	6,300	6
4.2.3 Test a prototype communication system for medical informatics.	300	500	1,300	1
4.2.4 Sponsor conferences, workshops, and symposia.	250	250	250	0
Subtotal:	\$7,400	\$9,900	\$13,045	18
4.3 Strengthen Competence in Medical Informatics in the Health Professions				
4.3.1 Strengthen institutional development within universities by:				
Immediately initiating six centers of excellence and,	\$6,000	0	0	0
Encouraging applications until there are 15 centers at the end of 10 years.	0	\$7,000	\$8,000	0
4.3.2 Support research training and career development through:				
Increased funded training programs from 5 to 10 institutions.	1,250	1,250	1,250	0
Increased training grants until 20 institutions are supported by the end of the next decade, and,	0	250	500	
Increased support for:				
New Investigator Awards	1,000	1,000	1,000	0
Research Career Development Awards.	500	500	500	0
4.3.3 Strengthen collaboration and scholarship at NLM by:				
Introducing a formal visiting scholar program.	150	150	150	3
Supporting sabbaticals at NLM for up to 5 mid-career professionals.	150	150	150	0
Subtotal:	\$9,050	\$10,300	\$11,550	3
TOTAL DOMAIN 4:	\$19,450	\$26,200	\$33,595	21

Additional Resources Needed to Implement Individual Recommendations
Domain 5: Assisting Health Professions Education Through Information Technology

(Dollars in Thousands)

Goals and Recommendations	Incremental Resources			
	FY 88	FY 89	FY 90	Personnel
5.1 Develop Educational Applications of Computer Technologies				
5.1.1 Support development of information technology applications:				
Intramural projects	\$1,400	\$1,400	\$1,400	8
Extramural projects	1,400	1,400	1,400	0
5.1.2 Promote awareness of computer educational resources:				
Intramural projects	450	450	450	4
Extramural projects	2,100	700	700	0
5.1.3 Support testing of computer-based learning materials.	1,000	500	500	0
Subtotal:	\$6,350	\$4,450	\$4,450	12
5.2 Develop and Test Prototype Knowledge Management Systems				
5.2.1 Develop an extramural grants, special initiative program for research and development, demonstration, and assessment.	\$750	\$900	\$1,050	0
Subtotal:	\$750	\$900	\$1,050	0
5.3 Evaluate NLM role as Resource in Support of Automated Systems				
5.3.1 Investigate feasibility of a registry or data base of computer-based educational materials.	\$250	0	0	0
5.3.2 Investigate the feasibility of establishing a biomedical images library at NLM.	0	\$250	0	0
Subtotal	\$250	\$250	0	0
TOTAL, DOMAIN 5:	\$7,350	\$5,600	\$5,500	12

Board of Regents Planning Budget for the National Library of Medicine
FY 1986-FY 1990 by Domain
(Dollars in Thousands)

	1986 Actual			1987 Conference Allowance		
	Extramural	Intramural	Total	Extramural	Intramural	Total
Domains						
1: Building and Organizing the Library's Collection	\$ —	\$17,243	\$17,243	\$ —	\$19,214	\$19,214
2: Locating and Gaining Access to Medical and Scientific Literature	6,646	7,354	14,000	7,263	7,434	14,697
3: Obtaining Factual Information from Data Bases	357	2,540	2,897	400	3,437	3,837
4: Medical Informatics	5,251	3,250	8,501	6,567	3,680	10,247
5: Assisting Health Professions Education Through Information Technology	—	2,976	2,976	—	3,100	3,100
Subtotal	12,254	33,363	45,617	14,230	36,865	51,095
Research Management and Support						
Extramural Management			1,316			1,473
Program Management			4,090			4,376
Subtotal			5,406			5,849
NIH Management Fund			4,250			4,894
Total, NLM			\$55,273			\$61,838

Board of Regents Estimate

1988			1989			1990		
Extramural	Intramural	Total	Extramural	Intramural	Total	Extramural	Intramural	Total
\$ —	\$22,859	\$22,859	\$ —	\$23,344	\$23,344	\$ —	\$23,314	\$23,314
13,763	10,819	24,582	14,763	11,689	26,452	15,763	12,709	28,472
400	16,192	16,592	400	16,192	16,592	400	16,192	16,592
20,467	9,230	29,697	25,017	11,430	36,447	29,612	14,230	43,842
5,250	5,200	10,540	3,500	5,200	8,700	3,650	4,950	8,600
39,880	64,300	104,180	43,680	67,855	111,535	49,425	71,395	120,820
	1,723	1,723		1,723	1,723		1,723	1,723
	4,526	4,526		4,526	4,526		4,526	4,526
	6,249	6,249		6,249	6,249		6,249	6,249
	4,894	4,894		4,894	4,894		4,894	4,894
	\$115,323	\$115,323		\$122,678	\$122,678		\$131,963	\$131,963

Board of Regents Planning Budget for the National Library of Medicine
FY 1986-FY 1990 by Budget Activity
(Dollars in Thousands)

	1986 Actual	1987 Conference Allowance	FTEs	Board of Regents Estimate			FTEs
				1988	1989	1990	
Extramural Programs							
Medical Library Assistance	\$7,530	\$9,410		\$22,410	\$21,910	\$23,310	
Medical Informatics	4,724	4,820		17,470	21,770	26,115	
Subtotal	12,254	14,230		39,880	43,680	49,425	
Intramural Programs*							
Library Operations	25,384	27,791	304	33,746	35,076	36,041	322
Lister Hill Center	8,915	10,386	78	20,861	23,086	25,661	120
Toxicology Information Program	3,314	3,582	31	4,867	4,867	4,867	42
Biotechnology Information	—	—	—	9,720	9,720	9,720	34
Subtotal	37,613	41,759	413	69,194	72,749	76,289	518
Research Management and Support							
Extramural Management	1,316	1,473	19	1,723	1,723	1,723	24
Program Management	4,090	4,376	72	4,526	4,526	4,526	75
Subtotal	5,406	5,849	91	6,249	6,249	6,249	99
Total, NLM	\$55,273	\$61,838	504	\$115,323	\$122,678	\$131,963	617

*Includes NIH Management Fund